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Larken MAXCOM

For the
TS-2068 with LKDOS

300/1200 BAUD TELECOMMUNICATIONS SOFTWARE

>>> 64 COLUMN TERMINAL EMULATOR <<<
>>> DELUXE REMOTE USER BBS <<<

LARKEN MAXCOM 2068 Communications Software

Welcome to Maxcom for the 2068 and LKdos operating system. Maxcom is a complete communications package, with a 64 column Terminal Emulator and a full feature Remote-user BBS, all in one program.

Maxcom directly links the LKdos operating system to the modem so when you send or receive files, the size of the file can be very large, up to 110K. All other modem packages for the 2068 are limited to just the free memory they have.

Using Maxcom you can easily send Basic programs,code or even NMI saves over your modem. Also files are sent with a information header,like the one used by the 2068 cassette system, so files transfers are very easy .

Maxcom can be used with the 2050 modem or with a 1200 baud modem (Z-SIO RS232 interface required). It is also the only modem program for the 2068 that can run at full 1200 baud and not miss characters.

Maxcom also displays IBM monochrome graghic characters so you can receive pictures on your screen.

Although Maxcom has the capability of sending itself over the modem to another user, i hope no one will do this. Maxcom is not public domain.

Loading Maxcom

On the disk there are 2 versions of Maxcom. Maxcom.B1 is for use with the 2050 modem and Maxcom.BZ is for use with the Z-SIO sold by ED GREY (see Z-SIO section for address). To load either one enter RAND USR 100: LOAD "Maxcom.B1" or "Maxcom.BZ" (you can also load it using the Autostart loader on disk. Just press enter while turning on the 2068.)

Maxcom consists of a Large Basic program and a 7K Code file.

Before loading, besure to have connected up all your modem hardware and connected all phone jacks.

After it loads you will be presented with the main menu. The top of the screen displays the status of Maxcom the modem and the disk buffer.

>>>>> Main Menu Commands <<<<<

TERMINAL MODE - To enter the Terminal Emulator, press 't'. To exit from terminal mode press Symbol-shift 'A' (SS-A). If you are using the 2050 modem, and would like to connect with an other modem user, you can use the Auto dial choice in the menu to dial the number and then connect you. It will automatically enter the terminal mode if it gets a connection. You can also dial the number yourself and then enter terminal mode when you hear the carrier tone.

In terminal mode, Caps shift 1 to 0 all have special uses.

Caps shift 1 - will let the next key pressed be a Control character. (see table near end of this manual for control chrs)

Caps shift 2 - Caps lock toggle.

Caps shift 3 - Toggle Duplex

Caps shift 4 - Toggle buffer if buffer file has been opened.

Caps shift 5,6,7,8 These are Macro keys. You can send a preset message that is stored in the 4 data statements at line 1100 in the Basic program. These can be use for holding loggon names, passwords, commands or commonly used messages. To change these, just break the Basic at the main menu, put in your new message and goto 9960 to resave Maxcom.

Caps shift 9 - Lets you send an ascii or text file to the other caller. Just enter the file name of the file to be sent. If you dont want to send a file, just press enter.

Caps shift 0 - Back space or delete.

RECEIVE FILE

You can receive a file (download) from an other modem user or BBS using the X-modem protocal. Maxcom can receive a file in 2 formats. With info header (Spec-term 64 compatible) or without header. The header contains the info necessary to save the received basic or Code to disk exactly the way it was stored on the senders disk. Necessary information such as auto-run line number and the length of the variable area for Basic progarms or Start address of code and length of code for Code files, is sent with the file. If the sending party is using Maxcom or Spec-term 64 then enter 'y' when maxcom asks if you are receiving file with header.

If the sending party is using Zterm or TMS Xmodem then enter 'n' to the 'sending with header 'prompt. You will need to ask the sending party to send you the length (and possible start) of the file before the starts sending. If the sender doesnt know the start address of a code file enter 32000. But to load the code afterwards you will need to load it at the correct address.

When receiving a file, after getting the file name and nessessary info from the sender, tell them to start sending in 10 seconds. Then enter Receive mode from the main menu and enter the file name and other info into maxcom quickly. When the file is being received '+' will be printed on the screen for each good block received. A '-' will be printed for each bad block. (dont worry about getting bad blocks. The Xmodem routine will ask the transmitter to resend that block. Bad blocks are usually caused by noise on the phone line.)

If '+' isnt printed on the screen within 1 minute of starting, then abort the transfer by holding down on the space bar until it aborts, then send the transmitting party Control X's until they abort also. You can also press SS-A to stop the program. Just RUN to resume and then send Control X's to abort the TX.

SEND FILE - Sending a file (transmitting or Uploading) is similar to receiving a file. You must specify with header or without header (Maxcom and Specterm 64 should use header). You must send the name of the file to the receiving party before the file is transfered. Maxcom will automatically print on the receivers screen the start and length of the file.

Agree with the receiving party to start receiving in 10 seconds before going into the Send file command in the main menu.

UART SETUP -The main chip in the 2050 modem or Z-SIO RS232 interface is the 8251 Universal Asynchronous Receiver Transmitter (UART). It performs the task of serial to parallel conversion, and error checking. When using serial communications such as modeming, the sender and receiver must agree on the length of the data byte sent (7 or 8 bits), the number of stop bits sent for each byte (1 or 2) and the parity for error checking (even, odd or none). The most common setup used today is 8 an bit byte, 1 stop bit and no parity (8/1/N). Older systems use 7/1/E. 8/1/N should be used for all 2068 modeming. Maxcom.B1 is setup for 8/1/N at 300 baud when it is loaded. If you want to change this or select 1200 baud then the 'U' option in the main menu should be used. Maxcom.BZ (Z-SIO RS232) is setup for 8/1/N at 1200 baud when it is loaded.

XMOD TYPE - is the length of the X-modem block you are sending or receiving. The standard is 128 bytes and should be normally used. I have added 2 other options that can be selected by pressing 'x' in the main menu. They are 512 and 1024 byte blocks. If both modem partys are using Maxcom you both may want to try using these larger block sizes to speed up file transfers of large files. Dont use these larger sizes if the telephone line has a lot of static on it.

MESSAGE BASE - This is for loading, saving or modifying the message bases used by the BBS. More on this is in the BBS section.

CATALOG DRV - Lets you catalog and select drives. You will be asked for Drv # and String (for selective catalogs). Just press enter if you dont want to change drives or search for a string in the catalog. The current Drive number is printer in the catalog command in the main menu.

DUPLEX TOGGLE In Half duplex, Maxcom sends out keypresses you make, to the modem and prints them on the screen also. In Full duplex, maxcom send out the keypresses to the modem, but doesnt print them on the screen. To change duplex, either press 'd' when in the main menu or press CS-3 (Caps Shift 3) when in terminal mode. If are getting double characters on your screen, then you should toggle duplex to Full. If you cant see what you are typing then toggle duplex to Half. Full duplex is generally used by BBS's to ensure what they get is what you see.

BUFFER OPEN -If you would like to save text that is being printed on the screen in terminal mode for later use, you can open a file on disk to act as a very large buffer (up 110K). Use 'B' in the main menu to open the file before you enter terminal mode. When a file is open, the 'BUFF' in the status menu will flash. When in terminal mode, you must use CS-4 (Caps shift 4) to turn the buffer stream 'ON' before text will be sent to the disk. This way you can use CS-4 to only save text you want. After you have captured all the data you want, return to the main menu and use the 'B' command to Close the buffer file. You cannot use the file transfer commands or enter BBS mode while the buffer is open.

AUTO DIALER - This command is for the 2050 modem only. Enter your number without spaces or other characters than numbers. If a connection is made it will enter terminal mode automatically.

If you wish to abort the call, press the space bar.

Some 2050 modems may dial wrong numbers because of a sticky relay on the board.

Dialing with a 1200 baud modem is usually done using a Hayes command in terminal mode such as >ATDP 8352680.

HANGUP PHONE - This command is for the 2050 modem only. This command is for disconnecting the modem to terminate a call.

--- MAKING a CALL using MAXCOM ---

If you are calling another modem user, you can make voice contact first then both enter terminal mode at the same time. Or you can use the autodial command to make the connection if you are calling a BBS or the other party has his modem in auto answer mode.

The Red LED on the 2050 will light up when it detects a carrier and has made a connection.

When calling a BBS, usually you need to press 'enter' a few times before the BBS will start sending its logon message. If you call BBS's often, you should put your name and password and commonly used BBS commands in Maxcoms Macros. Data statements in lines 1100 to 1130 in the Maxcom Basic hold the 4 macros. Pressing CS-5 to CS-8 in terminal mode will transmit the macro. This lets you save time when entering commonly used words.

While the call is in progress, you can exit the terminal mode by pressing SS-A to go to the main menu with out losing the connection.

If a BBS is printing data on your screen too fast for you to read you can send a 'Control S' (^S) which will signal the sender to stop sending. Control Q (^Q) will signal the sending BBS to continue sending data.

If you would like to save text that is being printed on the screen for later use, you can use the 'B' command in the main menu to 'Open' a buffer file to disk. For a buffer file name, use a Code type (.C). Once in terminal mode you can turn the text stream on and off to the disk, by toggling CS-4. When you have captured all the text that you want, you must 'Close' the buffer file by using the 'B' command in the main menu. You can view the file later by using the RAND USR 100: PRINT "file" command in LKdos. You can print the file to printer by Opening #3,"lp" and then using LPRINT USR 100: PRINT "file" or with the LKdos V3 use :LPRINT "file"

Maxcom supports IBM graphic characters so if the host BBS also does, you can receive pictures on your screen. It doesnt however, support Ansi color or sound codes so these may appear as numbers in brackets.

Always exit a BBS through the BBS's log off command. After exiting, goto the main menu and use the Hang up command to disconnect the 2050 modem.

Tips on File Transfers

Maxcom has the option of sending files with or without a file information header.

An information header is similar to the cassette header. For a Basic program it contains the length of the program, Starting line number, and the length of the variable area. For a Code file it contains the length of the code, and the loading address of the Code. Sending a file with a header lets the receiving program save the file to disk exactly the way it was stored on the senders disk.

Sending files without a header is not as good because the exact length of the file can be rounded off by the sending xmodem routine and start addresses of code and variable size and starting line numbers of basic are not saved with the received file.

There are a number of other communication programs available for the 2068. Mterm2, Zterm, Spec-term 64, TS-Xmodem and others. Each has different ways of sending programs.

M-TERM2 - Can send files in HEX mode or Ascii only. Adding TS-xmodem allows you to send files with Xmodem. The files are sent without an info header.

Z-TERM - This term prog is meant to be used with the OS-64 64 column operating system by Zebra systems. It supports Xmodem, HEX and Ascii. Files are sent without header.

SPEC-TERM 64 - Can send files with Xmodem or Ascii. This program sends files with a header.

If you are communicating with some one using Mterm2 (with TSxmodem) or Zterm, you will have to transfer without a header. If you are receiving the file you will have to ask the sender to give you the Name of the file, length of file, and start address of code (if its a code file).

If you are calling a BBS that is running Maxcom, when doing file transfers, you will have to enter the file name and enter 'y' for header for both maxcom programs. This is because both ends of the File transfer need to know the same information.

When a file transfer is done with maxcom using a header, the file name you give it is used to create the file. The name in the header is ignored but all the other header info is used.

Ascii or Text files can be sent using CS-9 in terminal and received by opening the Buffer in the main menu. How ever when using the buffer to receive data, a few characters may be lost during disk accesses. Maxcom sends a ^S before doing the disk access but some times the sending party cannot stop fast enough.

>>> ASCII CONTROL CHARACTER TABLE <<<

The following table lists the meaning of all the control characters (^). Maxcom can send them all out but only responds to ^G ^Q ^S and ^\ .

Chr	Dec	HEX	Description	
@	0	00	NULL	
A	1	01	Start of header	
B	2	02	Start of text	
C	3	03	End of text	
D	4	04	End of transmission EOT	
E	5	05	Enquiry	
F	6	06	Acknowledge ACK	
G	7	07	Bell	
H	8	08	Back space	
I	9	09	Horizontal Tab	
J	10	0A	Line Feed LF	
K	11	0B	Vertical Tab	
L	12	0C	Form Feed FF	
M	13	0D	Carriage Return CR	
N	14	0E	Shift Out	
O	15	0F	Shift in	
P	16	10	Data link escape	
Q	17	11	DS1 X-On - Scroll release	
R	18	12	DS2	
S	19	13	DS3 X-Off - Scroll stop	
T	20	14	DS4	
U	21	15	Negative Acknowledge NAK	
V	22	16	Synchronous idle	
W	23	17	End transmission Block	
X	24	18	Cancel CAN	
Y	25	19	End of medium	
Z	26	1A	Substitute	
[	27	1B	Escape	Use SS-Y
\	28	1C	Home screen	Use SS-D
]	29	1D	Group separator	Use SS-U
^	30	1E	Record separator	Use SS-H
_	31	1F	Unit separator	Use SS-0

>>>>> MAXCOM REMOTE USER BBS <<<<<

The BBS has a lot of applications from a 24 hour Club BBS, to just leaving it setup so a fellow TS user can call and get programs while you are not there, or even as a monitoring system for your house while you are away.
The BBS is the largest part of the maxcom program and has many features found only on BBS's for larger computers.

- 300 or 1200 baud operation -2050 or Z-SIO
- Passwords, Priority levels, User time limits.
- Multiple message bases with message searching.
- Uploads and Downloads not limited by memory.
- Help files and Bulletins are printed from disk.
- Access to disk drives by remote user.
- Interupt driven hangup and time out watch dog.
- Keeps a User log on disk of BBS caller activity
- Dual-window monitor screen.
- Easily customized and expanded.

--- CALLERS COMMANDS ---

The commands available to the caller from Maxcom (stock version) are -

CAT - catalog the current drive over the modem
GOTO - used to select a different drive
ULOAD - send a file to the BBS with Xmodem
DLOAD - BBS send a file to the caller with Xmodem
PRINT - print a file to the callers screen
STATUS - tells the caller, current drive, xmod block size
MESSAGE - Enters the message base area of the BBS
HELP - prints selected help files to the caller
TALK - pages system operator and goes to terminal mode
BYE - lets caller exit the BBS
! - Special sysop (system operator) commands

>>> Necessary Customization <<<

Before running the BBS there are a few customizes you should make in the program to suit you and your setup. You should list out the Maxcom Basic to a printer so the program can be followed easier. After you have customized Maxcom, you can save it to a new disk by GOTO ~~[illegible]~~ 9960. Keep your origional version.

The Maxcom BBS can run on 1 to 4 floppy drives with an optional ramdisk. After loading Maxcom from disk remove the Maxcom disk so it cant be downloaded,or so the program cant be printed over the modem and its passwords read.

- In line 8705 of the Basic, change Y$ to your name.
If you are using 2 or more disk drives, you can protect your system drive (the one with the message Bases) from callers doing File transfers to it by LET SYS = (that drive)
The system disk should contain the message bases 'GENER.A$' and 'FILES.A$' (create more if you like), also help files "NewUsr.CT" and "Files.CT" and 'Logon.CT' and also 'U-List.A$'.
The Maxcom program should not be on this disk.
If you only have 1 drive, you can remove line 4055 so file transfers can be done on the system drive.

- Line 4040 and 4042 deal with the caller selecting one of your disk drives. If you only have 1 drive, remove the GOTO command from the BBS menu and remove lines 4038,4040,4042 and 4044.
If you have 2 or more drives, edit line 4040 to reflect this.
In line 4042 change this line to suit the number of drives you have. eg: If you have 2 drives and a Ramdisk the line should read - IF a$="0" OR a$="1" OR a$="4" THEN ...

- Maxcom has a Password and priority system. If you dont want to use the password system then remove the REM token in line 3170 so it should read - 3170 LET Pr=4: GOTO 4000
If you want to use the password system then add your User Names, Passwords and priorities to the DATA statements between lines 3400 and 3499. Names should be 12 chars or less and Passwords 10 char or less.
Priority is the level of access allowed to a caller.

Priority 1 - no Uploads or Downloads.
2 - Downloads allowed, Uploads not allowed.
3 - Both Uploads and Downloads allowed.
4 - not used yet.
5 - Reserved for the operator of the BBS only for special commands.

The BBS is setup so a caller must use the name 'GUEST' if he is unregistered . This will set his priority to 1.
The last Data statement in the user log should have 'END' as its name, marking the end of the list.

The system disk should have a Logon.CT file on it which is the Graphic picture or Block of text that is printed when the caller first enters the BBS. The Logon.CT file supplied on the Maxcom disk draws a picture of a 2068 using the Ibm graphic chrs and prints ****** MAXCOM BBS ******.
I have added a simple program on the disk 'GXedit.B1' to help create logon displays that contain graphics and text. The graphics and text are put into data statements. The variable TX is put in a data statement before a text $ and the variable GX should preceed a String$ that you want converted to graphics.
The Ascii - Graphic table on the last page shows you the chr codes for the graphics.
Since the Ibm graphic chrs range from B0h to DFh (hex), they cannot be entered directly from the keyboard. By entering ascii characters starting at 40 (hex) '@' into the data statements and then adding 70 (hex) to them when printing them the graphics can be handled by the keyboard.

>>> SETTING UP the BBS <<<

You should make a working system disk for your BBS. To do this, load the deluxe move program "Move.B+" supplied on the maxcom disk and move all the '.CT' (text) files and the '.A$' files (message bases) to a newly formatted disk.
Load your customized maxcom program and then put the working system disk in the system drive (designated by the LET sys=?).
Make sure that none of the disks in any of the drives are write protected!. Load a message base,useing the 'm' comman to get to the message base menu.

You can now press 'E' in the main menu to enter auto answer BBS mode.

The User Log 'U-List.A$' is updated by the BBS each time a caller hangs up. It stores his name, whether he left any messages and names of any files he may have uploaded or downloaded. This can be viewed using the PRINT command in LKDOS. U-list.A$ is not a message base .

The Ulist and Message bases can be reinitialized (cleared) by the message base menu commands.

To Exit from the BBS you can press 'm' while the BBS is waiting for a call or if a caller is on the line, you have to press SS-A and wait for the caller to enter a command. If you press BREAK, the BBS will Hang up on the caller and go back to answer mode.

------- OPTIONAL CUSTOMIZATION of MAXCOM --------

After you do the necessary customization described above, Maxcom is ready to go online.

How ever you can further customize maxcom to to make your BBS unique from other BBS's.

>>> Programming in Maxcom <<<

Maxcom uses a very easy (and fast) way to communicate with the modem. Just like the way you Print to, and Input data from your 2068, you can now do the same with the modem. QIn the 2068 you can use PRINT # and INPUT # commands to send and read data from different devices.

CHANNEL #	PRINTS to	INPUTS from
0	Lower screen	Keyboard
1	Lower screen	keyboard
2	Main screen	not accessable
3	Printer	not accessable

With Maxcom additional channels are opened for the Modem, and LKDOS windows. Note: Window 2 is not allowed in maxcom.

Additional Maxcom Channels

CH#	PRINTS TO	INPUTS FROM
5	Window 0(terminal)	not accessable
6	Window 1 (callers)	not accessable
7	Modem (and window 0)	Modem

In Maxcom for example, to read a callers name from the modem , you can use the basic command-

```
INPUT #7;"Enter your name -";LINE n$
```

Use the LINE type input command since it will not hang up if n$ contains quotes '"'.

To send text to the Modem, use- PRINT #7 ;"text to be sent"

In maxcom use the variable m for the channel number in INPUT commands.

```
eg: INPUT # m;"NAME ";LINE n$
```

And for PRINTing data to the modem use variable m1.

```
eg: PRINT # m1;"text"
```

This will allow the program to be tested on your screen by LET m=0 : LET m1=2 In BBS mode m=7 and m1=7

You can also use INKEYS #m to read a keypress on the callers keyboard. This works fine for the external devices like the modem but there seems to be a bug in the Timex rom when using INKEYS#0, which should be exactly the same as just INKEYS. For some reason INKEYS #0 doesnt read the keyboard properly.

Looking at the Maxcom basic you will see that all the callers commands are between lines 4000 and 5000. You can easily add new commands using INPUT# and PRINT# . Add your new commands between lines 4200 and 4800. Lines 4800 to 5000 are for sysop commands where priority is 5. You can add new sysop commands here to do things that regular users shouldn't do, such as erase files, Up and download message bases and use the System disk etc.

Help files and other text files such as logon messages, bulletins etc should be stored as a file on disk and printed to the callers screen using the PRINT #m;USR Mdos:PRINT "file" command.

The file should be written on a word processor such as Mscript since it can put a carriage return after each line. Tasword doesnt work very well because it formats each line to 64 chars with spaces .

Keeping the text file on disk reduces space in the maxcom basic and allows you to use a word processor to create the file.

The Maxcom Basic has extensive use of the VAL function to reduce memory used. How ever some parts of the BBS that need to run fast do not use these compression techniques. The main BBS loop between lines 4000 and 5000 and message base routines and small loops should be left in standard form for speed. Memory saving techiques can slow a program down by as much as 4 times.

Part of the maxcom code is actually a ram resident LKdos. It is accessed by PRINT USR Mdos: (memory dos).

This Mdos has sequential file commands OPEN and CLOSE and a modified version of CAT and PRINT which are better suited to printing to the modem since they check for callers keypresses while they are printing. Maxcom uses its sequential file capability to allow up or downloading and capturing text directly to disk.

Also in mdos is a modified window printing driver that supports back spacing and it has a window scroll routine that runs better at 1200 baud.

ERROR trapping is a problem with BBS's since they need to be able to recover on there own from almost any problem. Maxcom uses Interrupts to monitor modem status to see if the modem has lost its carrier,it checks to see if the callers time is up and it also checks to see if the program has stopped from any error.

Two different interupt traps are used. Rand Usr 61036 is used when there is no carrier present (auto answer mode) and if any error occurs, It will enter 'RUN 9230' to overcome the error.

Rand USR 61027 is used when a carrier is detected . It watches for loss of carrier, Time up, and also a stopped basic program.

It uses the ON ERROR command to direct lost carrier and time out errors to line 9000. Stopped program errors go to line 9230. Line 390 in the Basic initializes it after setting the ON ERROR command and setting the timer. The interrupt checks for time up by seeing if (23674) (MSB of frames) has been incremented to 0. It takes 18 minutes for (23674) to increment by 1. Location (23673) is the middle counter of frames and is incremented every 4.25 seconds.

Line 390 sets the logon timeout for aprox 3.5 minuites. After the caller has logged on, each time the BBS main menu is sent, the time out is set for about 1 hour. This allows time for a
very long file transfer.

The location 23545 holds a non zero number if the interupt causes the error. If the error is caused by a basic error (a Val command has cause Nonsense in Basic etc) then the error routine will try to save the Message Base, Clear the variables and reinitialize them and restart the BBS.

Do not use BREAK to try to stop the BBS, it will just cause a Cold reset. Press 'space' while the BBS is waiting for a call or press CS-A if a caller is on line and wait until they enter a command.

The sysop has access to other commands that arn't available to all other users. The '!' command in the main BBS menu (not printed) enters the sysop menu. Commands- Merge, Erase peek and Poke are available but others can be added. Be careful using commands that input numbers because if you input a character other than a number, you will cause a system error that will force a disconnect.

Merge can be handy for changing the user password list at line 3400.

If you are running the BBS without passwords, you will have to add a way for the sysop to be recognized.

Maxcom can have other applications than just a BBS. You could connect a I/O interface to your 2068 or use the joy stick port to read switches for a burglar alarm etc while you are away from your house.

>>> Message Base section <<<

Entering 'm' in the main menu brings you to the message base menu. You can create new message bases and then save them to disk or reinitialize old ones. If you add other message bases, be sure to modify the a menus starting at line 5500 to reflect this.

The sysop can read or enter messages directly by going to the message base sub menu by pressing 'r'.

The User activity list 'U-List.A$' can also be created or viewed. This array is not a message base, but a user log that records the name of each caller, and any file transfer name and if they left a message.

MESSAGE BASE STRUCTURE

The Messages are kept in the d$ array. Its a 2 dimension array (310,32) with 310 32 character strings. The first element in the array (1,1 TO 32) is used to keep information on the Message base.

d$(1,1 TO 3) = pointer to the next available unused space
d$(1,4 TO 7) = message number of last message entered
d$(1,8 TO 10) = total number of 32 chrs elements in array
d$(1,10 TO 15) not used
d$(1,16 TO 32)= Name of message base

The first 32 char element in each message is the message header. It has its first char as chr$ 130 (marking the start of a message). The (x,2) in the message header is the message number. The (x,3) in the message header is the length of the message in lines. It is used to quickly find the start of the next message.

The (x,8 TO 19) in the message header is the caller name the message is to. The (x,20 TO 32) in the message header is the subject the message is about.

The text of the message follows the message header in 32 char elements. The start of the next message marks the end of the last message.

A message is deleted by putting a chr$ 140 in the first char of the message header and a chr 139 in the first char of each element of the message.

The file name for saving the array is made up of the first 6 chrs of the message base name + ".A$" . Using this method you cant wipe out a message base on disk by saving the base with the wrong name.

The size of the message bases can be changed but be sure to have at least 500 free bytes of memory (Use PRINT FREE command) for the INPUT commands to use incase someone tries to input a lot of characters. Try to make the size of the array efficiently use the 5090 byte blocks used by LKdos.

When maxcom saves an array, it uses the first 5 characters of the message base name "+.A$" for the file name. This method prevents an array from being over written on the sys disk if a name gets entered wrong by the sysop or the caller.

It may be possible to use Tasword to edit and modify message bases, since it formats its text file similar to the way an array is stored. Tasword is 64 columns so there would be 2 message lines per tasword line. I used tasword type graphics to mark starts of messages etc. , to allow this possibility.

A basic program could be written to squeeze the Message bases to remove deleted messages.

--- Variables used by Maxcom ---

Mdos - address of the ram resident LKdos
INIT - used to reset the modem or RS232
TRANX - Xmodem transmit routine
XRECV - Xmodem recieve routine
Term - Address of the terminal emulator code
MV - Base addr of machine code variables
Xsiz - (address) size of the xmodem block
Flen - (addr) Total lenth of file to Uload or Dload
BAUDL - (addr) holds the uart setup byte
XTYPE - (addr) header or headerless file
ECHO - (addr) used for duplex
BUF - (addr) 1 if buffer file it open
BUFO - (addr) 1 if buffer file and stream open
HEAD - address of the file header
Time - (addr) time out delay for xmodem blocks
BBS - 0 if originated in Term mode 1 if origin BBS mode
Drv - (addr) address holds current drive #
m1 - channel number for print commands
m - channel number for input commands
r - record # (or element #) in d$ array
er - record # of last element used
pr - callers priority
n$ - callers name
p$ - callers password
y$ - callers log- Name and activity

Using the Z-SIO and a 1200 baud Modem

Maxcom can also be used with the RS-232 interface (Z-SIO) sold by Ed Grey, PO Box 2186, Inglewood CA, 90305 USA.

A 2050 modem can also be modified for use as a RS232 interface. (Zebra systems sells an adapter board for this)

You will also need a 300/1200 baud external Modem and an RS-232 cable. With this, you have an excellent modeming setup and if you do a lot of long distance calls, the 1200 baud can save you money. Maxcom is the only modem program for the 2068 that can run at full 1200 baud and not miss any characters.

Since there are 3 versions of the Z-SIO, you may have to make a few changes in maxcom basic. The port addresses for the 3 versions of Z-SIO are as follows-

	STATUS PORT	DATA PORT
STOCK VERSION	191	159
AERCO DISK VERSION	119	115
OLIGER DISK VERSION	223	215
Modified 2050 modem	119	115

Maxcom.BZ is setup for the stock version of the Z-SIO. If you do not have the stock version, you must change the variables STT (status) and DTT (data) in line 8705 to your addresses, and in line 9930 change ST and DT also. Put a new disk in your drive, and GOTO 9960 to resave your new version.

In line 9908 in the basic, the Poke 63814,110 sets the default RS-232 parameters to 8/1/N 1200 baud. If you would like maxcom to default to 8/1/N at 300 baud on powerup you can change the 110 to 111 and resave the program.

To make a call with a 1200 baud modem, you can use the auto dialer make the call and connect, or you can go to terminal mode and enter an auto dial command such as ATDP 8352680 (Hayes command) or dial the phone yourself and force originate mode (according to you modems manual).

When you make a call, you should have the RS232 and the modem set to the baud rate and the parameters (8/1/N or 7/1/E) to match the answering modem. Most 1200 baud modems dont auto-baud select in originate mode, only answer mode.

To use your 1200 baud modem on the BBS you will have to make a small modification to the Z-SIO board to be able to read the Carrier-Detect line on the modem.

The diagram on the last page shows the mod. You need to cut the PCB trace that runs from pin 4 on the 1489 to DSR (pin 6) on the connector and connect it instead with a short wire to DCD (data carrier detect on pin 8) on the connector. The DCD pin is more accessable from the solder side of the board, so run the wire through a hole in the board. Pin 4 on the 1489 IC has a small wire jumper on it already (due to an error on the PC board) so be careful not to remove this.

With the mod done properly, the value on the status port (PRINT IN STT) should be greater than 127 if a carrier is present. Check this by returning from terminal mode to basic while on-line and PRINT IN STT.

Before you enter BBS mode, you must enter terminal mode and set your modem up for auto answer mode.

When answering a call, the BBS relies on the modem sending the message 'CONNECT' to indicate that a modem is calling in at 300 baud, and when a 1200 baud call is answered, the modem should send the message 'CONNECT 1200'. The BBS reads these messages and configures the RS232 to the same baud rate for proper operation.

Most Hayes compatible modems do not send the 'CONNECT 1200' message unless you have given the modem the 'ATX1' command, which tells the modem to print this message when it answers a 1200 baud call.

You must also tell the modem to go to auto answer mode. On the modem i have (SX-212 Atari, Fully Hayes compatible) you must give it the command 'ATS0=1 ' This tells the modem to answer the call on the first ring. (check your modem manual to verify these commands). After you give the modem these commands you can enter BBS mode.

EG: to set up my modem to auto-answer at 300 or 1200 baud, i would do the following.

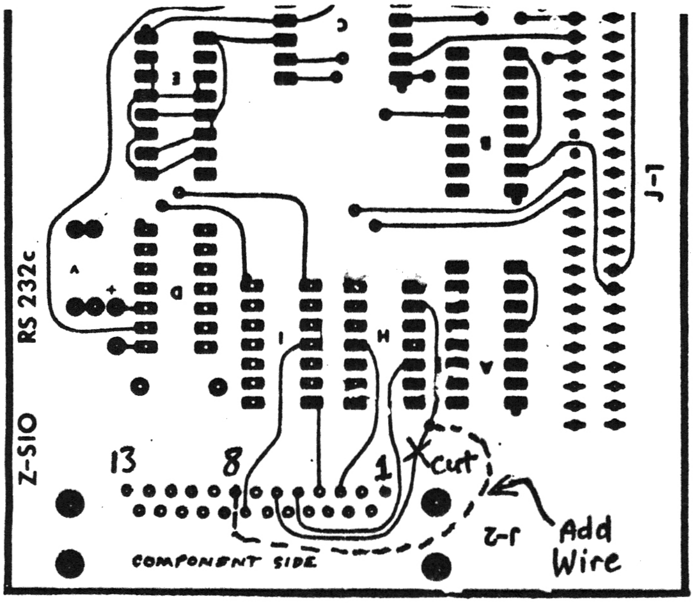
- Load a Message base (M command in main menu)
- Set the RS232 to 1200 baud 8/1/N (U command in main menu)
- Enter Terminal mode and type 'AT' (attention)
- Type 'ATX1' (set modem to send 'CONNECT 1200' message)
- Type 'ATS0=1' (Auto answer mode) ATS0=1
- Exit terminal mode and enter BBS mode.

Note- Each time you send the modem a command (AT..) ,the modem should respond with 'OK'. If it doesnt, check your connections or turn the modem off, wait 5 seconds and then turn it back on. The lights on the front of the modem can give you a good idea of what is the problem.

To break the program in auto answer mode, press SS-A to stop. Then GOTO 20 to restart maxcom.

If you are planning to run the BBS continously for long intervals, you should only have the minimum hardware connected to your 2068 to prevent overloading. I included the user Log in the BBS so a printer wouldnt be necessary. Also for safety you can put the whole system on a 2 amp fuse.

Z-SIO PC-BOARD MODIFICATION



component side

IBM ASCII-GRAPHIC CHARACTER SET

40(Hex)

B0(Hex)

	HEX.MSB													
HEX.LSB	0	1	2	3	4	5	6	7	8	9	A	B	C	D
0			SP	0	@	P	`	p				░	└	┴
1		DC1	!	1	A	Q	a	q				▒	┴	┬
2		DC2	"	2	B	R	b	r				▓	┬	┬
3		DC3	#	3	C	S	c	s				│	├	└
4		DC4	$	4	D	T	d	t				┤	─	└
5			%	5	E	U	e	u				┤	┼	┌
6			&	6	F	V	f	v				┤	├	┌
7	BEL		'	7	G	W	g	w				┐	├	┼
8	BS	CAN	(	8	H	X	h	x				┐	└	┼
9	HT		)	9	I	Y	i	y				┤	┌	┘
A	LF		*	:	J	Z	j	z				│	┴	┌
B	VT	ESC	+	;	K	[	k	{				┐	┬	█
C	FF		,	<	L	\	l	:				┘	├	▄
D	CR		-	=	M	]	m	}				┘	─	▌
E	SO		.	>	N	^	n	~				┘	┼	▐
F	SI		/	?	O	_	o					┐	┴	■